

Fig. 2 (a)

Example of bilingual key word dictionary

kohi [コーヒー] : coffee onegai [お願い] : * miruku [ミルク] : milk tsumetai [冷たい] : cold ari [あり] : *

Example of example DB

: I'd like to coffee please. : Expression pattern (kohi [コーヒー]→onegai [お願い]) Dependency relation

(tsumetai [帝たい]→miruku [ミルク]) (miruku [ミルク]→ari [あり]): Do you have a cold milk ?

Fig. 2 (b)

Example of tagged corpus

```
Kohi (common noun) | o (kaku-postpositional particle) | o (prefix) | negai (sahen-noun) | shi (verb) |
                                                                                                                                                                                                                                     Tsumetai (adjective) | miruku (common noun) | ha (kei-postpositional particle) | ari (verb) | masu
                                                                                                                                                                                                                                                                                                                                                        [冷たい (形容詞) |ミルク (普通名詞) | は(係助詞) | あり(動詞) |ます(助動詞) | か(終助詞)]
                                                                                                             [コーヒー(一般名詞)|を(格助詞)|お(接頭詞)|願い(サ変名詞)|し(動詞)|ます(助動詞)
                                                                                                                                                                                                                                                                                            (auxiliary verb) | ka (shu-postpositional particle) ···
                                                           masu (auxiliary verb)
```

Example of example DB

Dependency relation	: Expression pat
(kohi [コーヒー] →onegai [お願い])	: Coffee please.
(tsumetai [冷たい] →miruku [ミルク]) (miruku [ミルク] →ari [あり])	: Any cold milk?

Expression pattern Coffee please.

Voice recognizing means extracting means generating means Sentence example selecting means Output sentence Key word Word classing means database Example Classified vocabulary relation analyzing Dependency means table 2 5 Tagged corpus F 1 8

key word dictionary

Bilingual

9

Fig. 5 (a)

Classified vocabulary table

kohi [コーヒー] (common noun[一般右詞]) 100 miruku [ミルク] (common noun[一般名詞]) 100 koucha [紅茶] (common noun[一般名詞]) 100 ... tsumetai [冷たい] (adjective [形容詞]) 200 atsui [熱い] (adjective |形容詞]) 200

Fig. 5(b)

Example of example DB

: Sentence example	: I'd like to ② please.	: Do you have a ① ② ?	
: Dependency relation	: (D→©)	: (D→©) (Q→@)	
Key word	① 100 ② onegai[お願い]	$\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	
Ke	① 100	① 200	

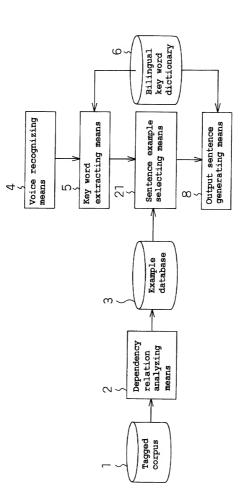


Fig. 6

Fig. 7

Input sentence

: Atsui miruku ha arimasuka [熱いミルクはありますか]

Recognition result sentence: Aoi miruku ha arimasuka [青いミルクはありますか]

Example of example DB

Dependency relation	Sentence example
(kohi [コーヒー]→onegai[お願い])	Coffee please.
(atsui[熱い]→miruku[ミルク]) (miruku[ミルク]→ari[あり])	Any hot milk?

Extracted key words : aoi $[\nexists \mathbb{N}]$, miruku $[\geqslant \mathcal{U} \mathcal{I}]$, ari $[\mathcal{L} \mathcal{I}]$

Result of dependency relation comparison between the key words and example DB:

(aoi [青い], miruku [ミルク]) × (aoi [青い], ari [あり]) ×

(miruku $[\exists \mathcal{N}\mathcal{I}]$, ari $[\not{a}\mathcal{V}]$) \bigcirc

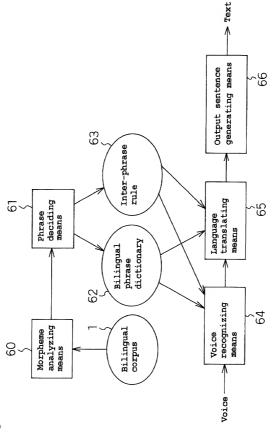


Fig. 8

Fig. 9-1 (a)

 $\sim\!70$ Bilingual voiced sentence example Heya no yoyaku o onegai shitain desuga [部屋の予約をお願いしたいんですが] I'd like to reserve a room.

Fig. 9-1 (b)

<72 Bilingual phrase (B) onegai shitain desuga [お願いしたいんですが] (I'd like to) (7) Bilingual phrase (A) heya no yoyaku (reserve a room) [部屋の予約]

Fig. 9-1 (c)



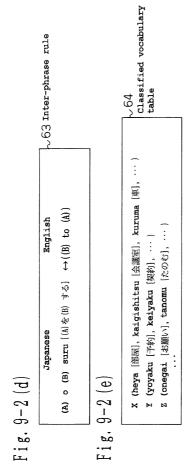


Fig. 10 (a)

Example of bilingual key word dictionary

coffee : kohi[コーヒー] please : onegai[岩簾小] milk : miruku [ミルク] cold : tsumetai [冷たい] have : ari [あり]

Example of example DB

: Tsumetai miruku ha arimasuka [冷たいミルクはありますか] :Kohi o onegai shimasu [コーヒーをお願いします] Expression pattern Dependency relation (cold→milk) (milk→have) (coffee→please)

Fig. 10 (b)

Example of tagged corpus

I (pronoun) | 'd (auxiliary verb) | like (verb) | to (determiner) | coffee (common noun) | please (adverb) |

Fig. 11 (a)

Classified vocabulary table

```
coffee (common noun) 100
milk (common noun) 100
tea (common noun) 100
...
cold (adjective) 200
hot (adjective) 200
```

Fig. 11 (b)

Example of example DB

Key	Key word	••	Dependency relation		ري دي	Sentence example	examb	le.		
① 100 (① 100 ② please		: ① o [を] ② shimasu [します] : ① o [を] ② shimasu [します]	#4]	•) o [&]	© sh	imasu	<u>_</u>	4]
① 200 (① 200 ② 100 ③ have :(①→②)(②→③)	$\stackrel{\circ}{\sim}$	(D→(Z) ((Z)→(3))			: ①② ha [は] ③ masuka [ますか]	(#)) mas	suka [ますか]
:										

Fig. 12

Input sentence : Do you have a hot milk?

Recognition result sentence : Do you have a head milk?

Example of example DB

Dependency relation : Sentence example

: Kohi o onegai shimasu [コーヒーをお願いします] (coffee→please)

(hot→milk) (milk→have) : Atsui miruku ha arimasuka [熱いミルクはありますか]

Extracted key words : (have, head, milk)

Result of dependency relation comparison between the key words and example DB:

(head, milk) ×

(head, have)

(milk, have)

Fig. 13 (a)

Example of bilingual key word dictionary

```
    申申 : kohi [コーヒー]
    要 : kudasai [下さい]
    日文 : nihongo [日本語]
    菜単 : menyn [メニュー]
    有 : ari [あり]
```

Example of example DB

```
: Nihongo no menyu ha arimasuka [日本語のメニューはありますか]
                                  : Kohi o kudasai [コーヒーを下さい]
: Expression pattern
                                                              ( 日文→菜単 ) ( 菜単→有 )
Dependency relation
                                ( 骨骨 → )
```

Fig. 13 (b)

Example of tagged corpus

```
要(計) | 咖啡(名同) | ・・・・
```

Fig. 14 (a) classified vocabulary table

4	1	
者号	(名)	100
# #	(名)	100
红茶	(名)	100
尐	(形)	200
槟	(形)	200
日文	(名)	300
菜	(名)	400
:		

Fig. 14 (b) Example of example DB

① 100 ② 要 ① 300 ② 400 ③	Key word : Dependency relation : Sentence example	② 要 :(①→②) : ① o [を] ②	① 300 ② 400 ③ 有 :(①→②)(②→③) : ① no [の] ② ha [は] ③ masuka [ますか]	
(9) S	H	×	00 ③ 有	

Fig. 15

Input sentence

有日文菜单吗

Recognition result sentence : 有日没菜单吗

Example of example DB

(日文→菜単)(菜単→有): Nihongo no menyu ha arimasuka [日本語のメニューはありますか] : Kohi o kudasai [コーヒーを下さい] : Sentence example Dependency relation (骨件→器)

Extracted key words: (有, 日没, 菜単)

Result of dependency relation comparison between the key words and example DB:

- (日没,有) ×
- (日没,菜単)×
- (菜単,有)